

THE VERNAY SCIENTIFIC SURVEY OF THE
EASTERN GHATS
(ORNITHOLOGICAL SECTION).

BY

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(*With two maps and one text-figure.*)

In the *Journal* for July 1930 (vol. xxxiv, pp. 386-403), we furnished an introductory account of the genesis of the Vernay Survey of the Eastern Ghats and the work which it was expected to accomplish. The introduction was then followed by a preliminary report on the first collection which was sent in by Mr. LaPersonne from the Salem district. Since that report was written, the work of the Survey in the field has been completed, and the whole collection has been received at the British Museum.

The speed with which the specimens from the various collecting camps reached England and the paucity of field-notes from some of the camps, have led us to abandon the idea of reporting separately on the birds from each locality. It was found that this would lead to a good deal of reduplication of work. Single birds would take as much time to identify as complete series. Whilst in those cases where revision of a species or group was required, it would be sheer waste of time to write out in detail the results of an examination, whose value and results might be affected by material received in a subsequent batch.

No further local report has therefore been written. In the meantime, however, much work has been put in on the collections. We now propose to start the publication, in batches, of the result of our examinations of the collection as a whole.

It will, however, be desirable to explain, first of all, the manner in which we propose to deal with our material.

After a good deal of consideration, we have decided to deal with the survey material from two aspects, that of the Madras Presidency as a politically defined area, and from the general aspect of Indian Ornithology.

There can be no doubt that, ornithologically, the Madras Presidency is the least known part of India. It is not easy to understand why this should be so, but the fact remains. We think therefore it will be useful to write our report in the form of an account of the birds of the Madras Presidency, mentioning all species which have been recorded from the Presidency whether they have been met with by the Survey, or not. Under each species we shall detail briefly all that is recorded about it from within the Presidency limits. Our idea is that this account should bring to the notice of observers within the Presidency the points on which they can supplement published knowledge. The distribution of even the most common birds is imperfectly known, and if our account serves to underline this fact there will certainly be a response from local observers who alone can fill in the deficiencies.

Here a word of explanation is due. Since we started the preparation of this aspect of the report, Messrs. Inglis and H. R. Baker

have published a book on the *Birds of Southern India*, by which is meant virtually the Madras Presidency. We have had to consider, therefore, whether this book nullifies this aspect of our report. We do not however think so. The authors expressly state that their book is a compilation, and it consists mainly of extracts from the new edition of the *Fauna*. The distributions are written in general terms and express not so much what are known to occur as what may be expected to occur. The result is not very accurate as the differences between the widely different areas included in the Presidency are marked and not always easy to foresee. We have therefore continued our original design, and because, (as explained below), we have gone back to original records. We have not quoted from the book except in respect of those records which are clearly original and published for the first time. This will explain why our account of the distribution of species in the Madras Presidency does not always agree with those in this book.

With regard to those species actually obtained by the Survey, we have gone into far greater detail. We have sought to make the new specimens the vehicle for a revision of the species represented. To this end we have done a great deal of work which will never appear on paper.

The first thing has been to collect and collate all published records that we could find bearing on the species within British India proper, keeping as a rule to the boundaries of British India, but taking cognizance of any records from Baluchistan, Kashmir, Assam, Burma and Ceylon which might appear to be useful and pertinent. These records have been plotted out on skeleton maps of India, similar to those used in the *Mammal Survey*. These published records have further been supplemented by any records we have collected from private correspondence and from the examination of specimens.

When the known range of the species within British India has thus been accurately discovered we have set ourselves to revise the question of geographical races. To this end we have examined and measured a vast amount of material. The main body of our material has of course been furnished by the huge collections of the British Museum. These have, however, been turned over by numbers of workers in the past 50 years. Our hope of finding new results of value are based on the fact that we have supplemented the material in the British Museum not merely with the specimens procured by the Survey, but by the large amount of fresh material contained in Dr. C. B. Ticehurst's collection from Sind and the large collections made in 16 years' service in N.-W. India by one of the authors of this report. In addition we have examined many other specimens contained in the Society's own collection as well as valuable material kindly provided by Mr. H. W. Waite, Colonel R. Sparrow, Colonel R. Meinertzhagen, Mr. A. E. Jones, Rev. F. S. Briggs, Mr. C. M. Inglis, Mr. D'Abreu of the Central Museum, Nagpur, the Director of the Zoological Survey, Calcutta, and Dr. Gravelly of the Madras Museum. It will be a long time before so much material is again available, assembled for examination. We are obliged also to Dr. C. B. Ticehurst for reading through our manuscript and assisting us on many points.

In estimating the question of geographical races in India, we have somewhat departed from the customary method of procedure. This is to take the specimens from an established type locality as a basis, comparing all others with them as a starting point. This would be an excellent method if a type locality were originally fixed on scientific principles, so that one might deduce from it some fact such as the origin of the parent form. But it has seemed to us that the basis of the type locality, as at present established under the rules of priority in nomenclature, is necessarily haphazard and unscientific. To take the first species on our list for instance—the Jungle Crow—we find that Poona has been fixed as the type locality for the form *culminatus* on grounds of nothing more or less than historical accident. If the geographical races of the bird in India were negligible and science was merely concerned with the Jungle Crow as a species, a central type locality like this might be an advantage. But examining the races of the bird and finding marked differences in the bird at the three points of the Indian triangle, differences almost sufficient to separate three species if there were not connecting intermediate areas, we can only regard as unfortunate a type locality near the area, where all three races intergrade.

In our examination of every species, therefore, we have *at first* entirely disregarded published opinions and the established type localities of the Indian area. We have worked out the apparent Indian races with their distribution *de novo* and then to the result have applied the existing names and type localities. By this means we are able to recognize races which would not be *so* apparent by the method of comparing extremes, not with each other, but with an intermediate.

We are afraid that field-workers in India may not relish the fact that in many cases we have had to differ from the sub-species as recognized in the *New Fauna*. We are in sympathy with their feelings. Twenty years ago, working ornithologists in India were almost alone in the world in the happy possession of a uniform nomenclature, that of Blanford and Oates in the first edition of the *Fauna*. They worked to a uniform and neatly numbered catalogue. But it was at the cost of a static separation from the progress in ornithology in the rest of the world. The perfection of their happy separation has made their re-entry into world-currents the more difficult. European ornithologists have had a complete generation of gradual changes in which to accomplish the change to recognition of subspecies and the strict application of the laws of priority. Indian ornithologists have paid the penalty for compressing these changes into a dozen years, the usual penalties for haste. The *Handlist* upset the firmly established nomenclature of Blanford and Oates. Then the new *Fauna* upset the *Handlist*, and was again itself upset by its own volumes of synonymy and corrigenda. Now we fear that we shall propose a number of changes that will not agree even with the revised list in vols. vii and viii of the *New Fauna*.¹

¹ For the sake of brevity we propose to refer to the *Fauna of British India, Birds* by Blanford and Oates, 4 vols. 1889-1895 as the *Old Fauna* and to the *Fauna of British India, Birds*, second edition, by E. C. Stuart Baker, 8 vols. 1922-1930 as the *New Fauna*.

These changes will be found to fall into two categories. In some instances we are unable to agree with the names in the check-list of vols. vii and viii for reasons concerned with the ordinary application of the rules of nomenclature. In the majority of instances, however, the changes will be found due to the fact that we are unable to agree with the subspecies as defined in the *New Fauna*. This is partly due to the fact that we have examined more material than Mr. Stuart Baker, some of which was not available when he wrote. We have thereby been compelled sometimes to recognize races on differences which, to some, may seem small. But we consider that the study of races must be consistent. If the possession of a large beak is sufficient to separate *Parus major newtoni* of the British Isles from the continental form, the fact that *Microscelis psaroides* in Ceylon has a larger beak than in Peninsula India is also sufficient for the creation of a subspecies. The fact itself was recognized by Hume 50 years ago. It is useless recognizing the north-western and south-western races of *Pomatorhinus horsfieldii* and denying recognition to the other equally marked races. A small difference is just as important as a large difference provided that it is constant and is recognizable under the usual 75 per cent. rule.

One thing however Indian ornithologists must clearly recognize. Under the binomial system of the *Old Fauna*, clear-cut distributions were easy and possible. A species occurs or does not occur in an area and the only doubt on the point is the credibility of the evidence. Under the trinomial system it is seldom possible to define the ranges of the different subspecies in a continental area like India, because of the intergrading between the subspecies, which are generally easily distinguished at their further limits and grade inwards to a common centre. The worker at Cape Comorin and at Peshawar will have little difficulty in identifying his subspecies. The man in the Northern Central Provinces will, on the other hand, be able to be positive about very few races amongst the wide-spread species. This difficulty cannot be got over and it becomes more apparent with every increase in the number of specimens available. It is not peculiar to India, but to all continental areas and species with wide continuous distribution.

We do not think that there is much to be gained from the use of the \leq signs to express this intergrading. These may be useful in a report on a single collection from an isolated and little-known area. But once full material is available from a large and continuous area, one is forced to make a choice of either dropping these signs altogether or using them in such a variety of combinations that their value entirely disappears. Remembering therefore that nomenclature is but a system of labels and convenience, and not in itself an end, we have entirely dropped these symbols and have given our distributions as far as possible in general terms, placing the birds of intermediate areas under those forms with which their inclusion appears most satisfactory.

Finally, we should like to emphasize that there is still much more to be learnt about Indian birds, especially as regards distribution, migration and local movements. There is a huge area in the centre

of the Peninsula between the Central Provinces and the southern boundary of Mysore which is virtually unknown and over which we have found no indication of the distribution of the most common species. So we urge all members of the Society to write to the *Journal* on any point, large or small, on which they can correct or supplement our conclusions.

In our introductory report we emphasized the debt of gratitude which ornithologists in general, and those of India in particular, owed to Mr. A. S. Vernay for making it possible for the Society to carry out the Eastern Ghats Survey. Now that all the specimens have come to hand, we would like to add that the results have fully justified the expense and trouble involved. Many new forms will need to be described from the collection. In addition, much new light has been thrown on the distribution and races of many other species already well known in other parts of India.

In all, about 1,550 birds were collected by Mr. V. S. La Personne who is to be warmly congratulated on the keenness and energy with which he pushed through the Survey. In the course of a year's collecting in places that were often wild and very unhealthy, he maintained the greatest interest in his work until the moment when malaria proved too much for the Survey and compelled a curtailing of its programme. We are happy to be able to state that the members of the Survey are now fully recovered from the effects of their malaria. A special word of praise is due to the way in which Mr. La Personne prepared his skins. From first to last, the birds have been collected with a uniform level of technical skill that can seldom have been surpassed.

For purposes of record we have, under each species, given a list of the actual specimens collected in the course of the Survey with a summary of their measurements. Unless otherwise stated, the measurement of the bill is taken from the actual base at the skull in a direct line to the tip. The tail measurement is taken with callipers. One point is inserted between the base of the two central feathers; the other is extended to the tip of the longest feather, whether central or external. The wing and tarsus are measured in the customary way.

Under the heading of each form we have inserted the original reference, date and type locality on which that name is based. In those cases where a summary of the Indian forms is given under the account of the race obtained by the Survey, the reference is inserted in the summary and not under the heading. In these summaries we have not arranged the races in chronological order. The sequence has been determined only by the convenience of each particular case and so varies. A bibliography of papers and records referring to the Madras Presidency with a note on previous collectors who have worked there will be given as an appendix.

A map has been specially prepared under the auspices of the Royal Geographical Society to show the collecting camps and the principal features of the Madras Presidency.¹ As the camps eventually differed somewhat from the original programme, detailed

¹ This map was specially drawn by Mr. H. F. Milne, and we are much obliged to him for the excellence of his work.

on pp. 387-8 of our introductory report, we now give the following summary of them.

ITINERARY

Salem District—

8th April 1929 to 7th May 1929.

Kurumbapatti Forest Reserve 1,000-1,500 ft.

10th May 1929 to 26th May 1929.

Shevaroy Hills. Camps at varying altitudes 3,500-5,000 ft.

28th May 1929 to 9th June 1929. Foot of Chitteri Plateau 1,500-2,000 ft.

10th June 1929 to 17th June 1929. East Chitteri Hills 3,000 ft.

19th June 1929 to 24th June 1929. Plains north of Chitteri Hills 500-1,000 ft.

Trichinopoly District—

1st July 1929 to 12th July 1929.

30 miles from Trichinopoly town.

South Arcot District—

14th July 1929 to 25th July 1929.

Gingee forest and open country around Tindivanam.

South Cuddapah District—

29th July 1929 to 28th August 1929.

Balapalli. Palkonda Hills 1,000 ft.

30th August 1929 to 21st September 1929.

Kodur. Below Palkonda Hills 500-1,000 feet.

23rd September 1929 to 27th October 1929.

Guvalacheruv 1929. Seshachalam Hills 2,000 ft.

South Kurnool District—

29th October 1929 to 1st December 1929.

Diguvametta, Nallamalai Hills 2,000 ft.

2nd December 1929 to 2nd January 1930.

Cumbum Valley, Cumbum, 1,000-1,500 ft.

Godavari Delta—

4th January 1930 to 31st January 1930.

Godavari Delta.

Vizagapatam District—

4th February 1930 to 28th February 1930.

Eastern Ghats. Anantagiri 3,000 ft.

1st March 1930 to 19th April 1930.

Eastern Ghats. Sankrametta 3,500 ft.

20th April 1930 to 15th May 1930.

Eastern Ghats. Jeypore Agency.

18th May 1930 return Bombay.

Corvus macrorhynchos culminatus Sykes.

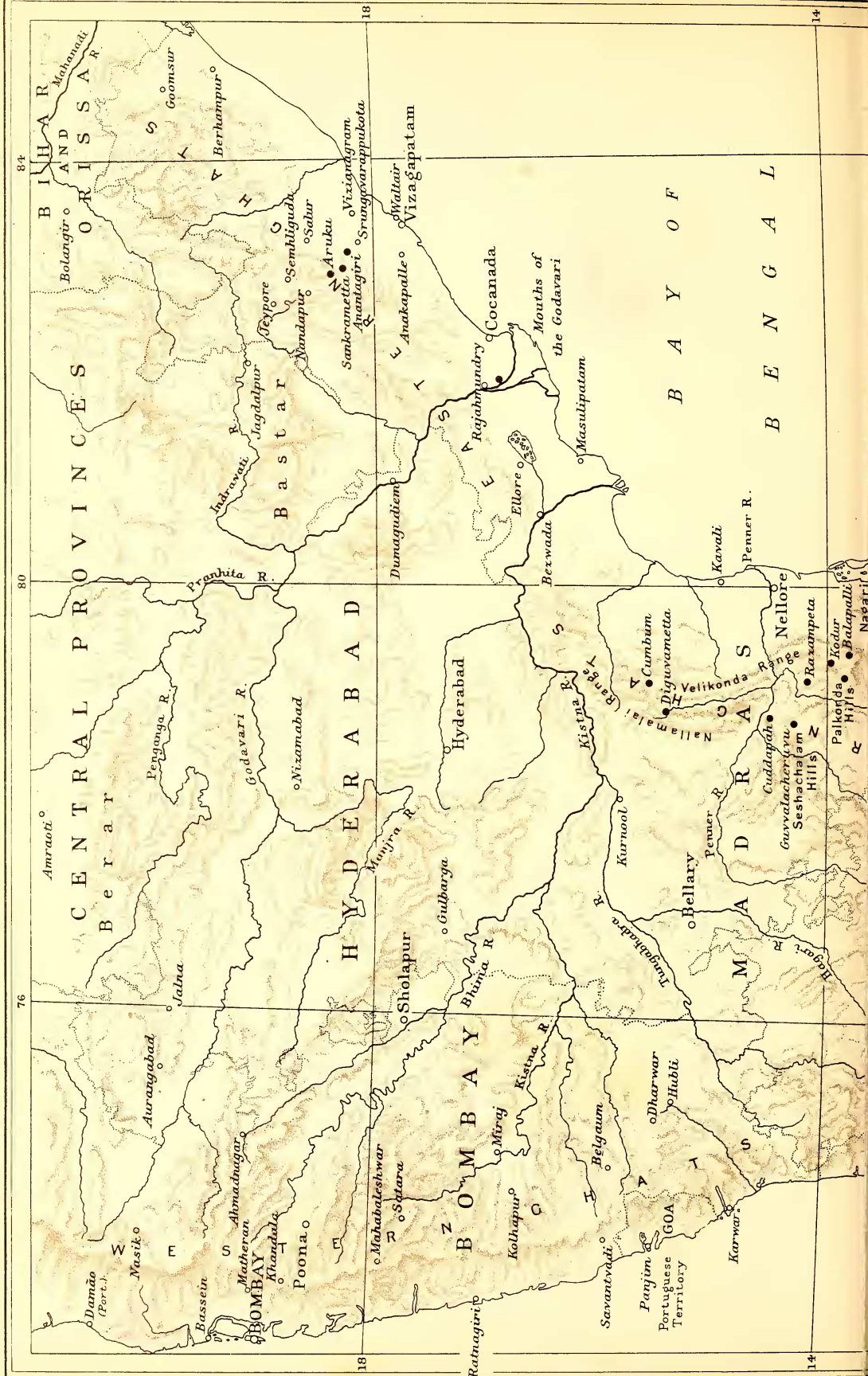
Specimens collected:—91 ♀ 19-4-29, 104 ♀ 21-4-29 Kurumbapatti; 294 ♂ 30-5-29, 391 ♀ 12-6-29 Chitteri Hills, 2,000 ft.; 1412 ♀ 19-2-30 Anantagiri 3,000 ft.

Measurements—

	Bill.	Wing.	Tail.	Tarsus.
1 ♂	62	278	176	54.5 mm.
4 ♀	56 5-58	279-297	167-174	55 mm.

As remarked in our first report (xxxiv, 390) there has been much difference of opinion as to the correct systematic treatment of the Jungle-Crow. Since we wrote, the question of whether this bird should be accepted as conspecific with the Australian *coronoides* has been settled in the negative (Hartert, *Nov. Zool.* xxxv, p. 53, 1929), and in his final volume Mr. Stuart Baker has accepted the change, regarding the Asiatic forms as forming one group. He has however fallen into the error of calling the species *levaillanti*. As pointed out by Delacour (*Ibis* 1930, p. 599), *macrorhynchos* is the older and correct name.

We are by no means certain, however, that further investigation will not show that the Jungle-Crows are merely oriental races of *Corvus corone*. It must be remembered that the two forms are exceedingly difficult to differentiate both in the museum and the field, and much of the supposed overlapping on the borders of N.-W. India is demonstrably due to wrong identification.



84

80

76

14

14

B I H A R
Mahanadi
Bolangir
O R I S S A R

C E N T R A L P R O V I N C E S
B e r a r
Ponganga R.
Jalna

Damão (Port.)
Nasik
Bassein
Ahmadnagar
Matheran
Khandala
Poona
Mahauleshwar
Satar

B A S T A R
Jachawati
Jagdalpur
Teyore
Mandapur
Sembhiguda
Satur
Araku
Sankranetta
Anantagiri
Srungavarappukota
Vizianagaram

H Y D E R A B A D
Nizamabad
Munjira R.
Sholapur
Gulbarga
Hyderabad

B O M B A Y
Kathapur
Mtraj
Kistna R.
Belgaum
Savantvadi
Karwar

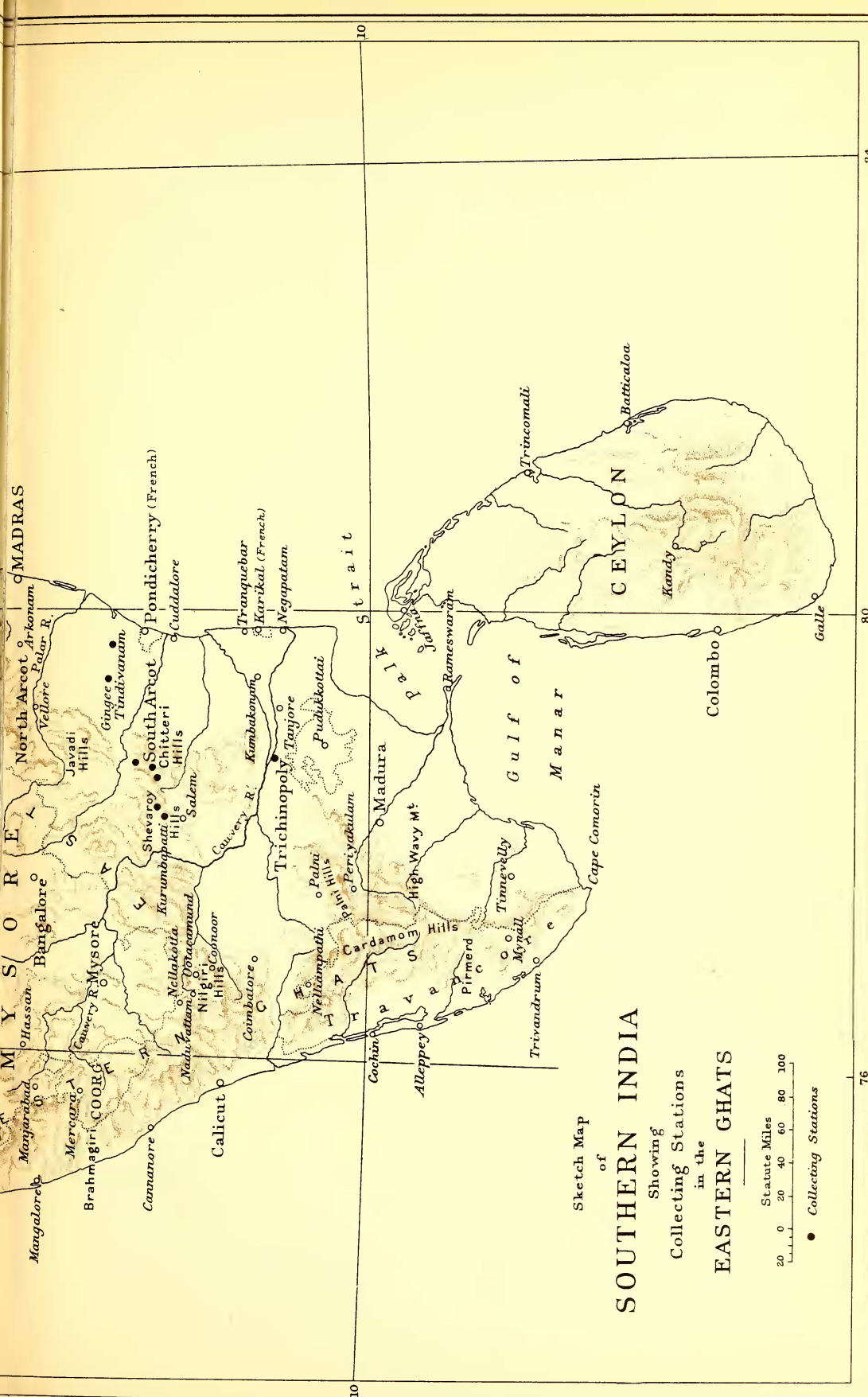
Dunagudiem
Anakapalle
Vizagapatam
Waltair
Cocanada
Rajahmundry
Ellore
Masulipatam
Mouths of the Godavari
Bezwada

M A R R A S
Kistna R.
Kurnool
Bellary
Gudlaph
Gurvalacheruvu
Seshachalam Hills
Nallamala
Velikonda
Rangas
Nellore
Raxampeta
Kodur
Palkonda
Hills
Batapalle
Naberi

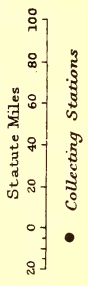
B A Y O F

B E N G A L

Portuguese Territory
GOA



Sketch Map
of
SOUTHERN INDIA
Showing
Collecting Stations
in the
EASTERN GHATS





Sketch Map
of
SOUTHERN INDIA
Showing
Collecting Stations
in the
EASTERN GHATS

Statute Miles
0 20 40 60 80 100

● Collecting Stations

As regards the races of Jungle-Crow within Indian limits there has been also some difference of opinion. To take two recent instances: Mr. Stuart Baker divides the birds of the Peninsula into two races *levaillanti* and *culminatus*. The former, he considers, occupies 'the whole of India south of the Himalayas, as far South as the Deccan and on the East to about the latitude of the Madras Presidency. To the North-east it is found up to the Bay of Bengal, but East of the Brahmaputra its place is taken by the Burmese form'. *Culminatus*, on the other hand, he considers as occupying 'India in the Madras Presidency southwards, the Deccan and South through Malabar and Travancore to the South of Ceylon'.

Meinertzhagen however (*Nov. Zool.* xxxiii, 1926, p. 85) differed considerably from this treatment. He placed the boundary between the two forms far lower in the Peninsula, namely 'south at least to Madras and the Nilgiri Hills' thus making *culminatus* a synonym of *levaillanti* and using *anthracinus* of Madarasz for the Southern race. Both these writers have made the mistake of keeping the measurements of the sexes together. They have also apparently failed to appreciate the fact that at the post-juvenile moult, the wing and tail-quills are not shed but retained so that all measurements of wing and tail of birds in their first year refer to the juvenile plumage and are so quite misleading. Had they appreciated this point, Meinertzhagen would have avoided (*loc. cit.* p. 83) dismissing the type of *culminatus* 'as a very small specimen', 'an aberrant specimen and not typical'—'similar dwarf examples occur at Simla, etc., but are exceptional'. It is in fact an immature bird completing the post-juvenile moult, and perfectly normal for its age. Whilst Stuart Baker would not have required (vol. i, p. 29) to have suggested that the late Summer birds which decreased the average measurements 'may well be visitors from the plains wandering into the hills after breeding'.

It was disappointing to find that the Survey had missed the opportunity of collecting a large carefully-sexed series of Jungle-Crows. For since all writers on the subject had arrived at different results from the examination of the same material in the Hume collection, the obvious need was to get fresh material. At our suggestion, however, with the co-operation of the Indian Museum, the Nagpur Central Museum, and the Madras and Trevandrum Museums, the Society was able to collect some fresh specimens. Combined with those in the Whistler collection this new material amounted to over 70 birds, of which the majority were from the N.-W. Himalayas, Calcutta and Bombay, virtually to potypes that is of *intermedius*, *levaillanti* and *culminatus*. With this basis we have re-examined the crows in the Hume collection.

The result shows that there can be no hard and fast line of demarcation between the races. Individual variation is great so that individuals as well as first-year birds interrupt slightly any orderly sequence of measurements. But allowing for this there is a regular and gradual intergradation between the crows of the whole of India from a small-billed race in Ceylon to a large bird with a small bill in the Western Himalayas and a medium-sized bird with a deeply-bowed Raven beak in Bengal. The sequence continues eastwards until we reach the huge bird with the huge beak of Java. The facts are clear. The problem largely resolves itself into one of convenience as to the best way to express these facts.

Birds from the N.-W. Himalayas present no difficulty. Their habitat is largely isolated. That the same race extends to the Eastern Himalayas is a matter of supposition. No series exists to prove the point.

It is clear moreover that birds from Ceylon and Bombay and Nagpur and Vizagapatam cannot be separated, whereas they differ most markedly from the Calcutta series¹ with the strongly curved Raven beak (*vide* text figure, p. 512). This latter we cannot separate in any way from the Assam, Burma and Andaman birds.² The measurements speak for themselves on this point.

	Bill.	Wing.	Tail.	Tarsus.
4 ♂ Calcutta	61-66	310-328	186.5-196.5	58-59 mm.
5 ♂ Andamans	60.5-67.5	265-322	167-199.5	53.5-59 mm.
8 ♀ Calcutta	55.5-65	283-305	165-182	52.5-56.5 mm.
5 ♀ Andamans	60.5-65.5	287-307	164-185	53.5-56 mm.

¹ *Corvus levaillanti* Lesson, *Traité d'Orn.* (1831), p. 328—Bengal.

² *Corvus andamanensis* Beavan, *Ibis* 1866 (October), p. 420—Andamans.

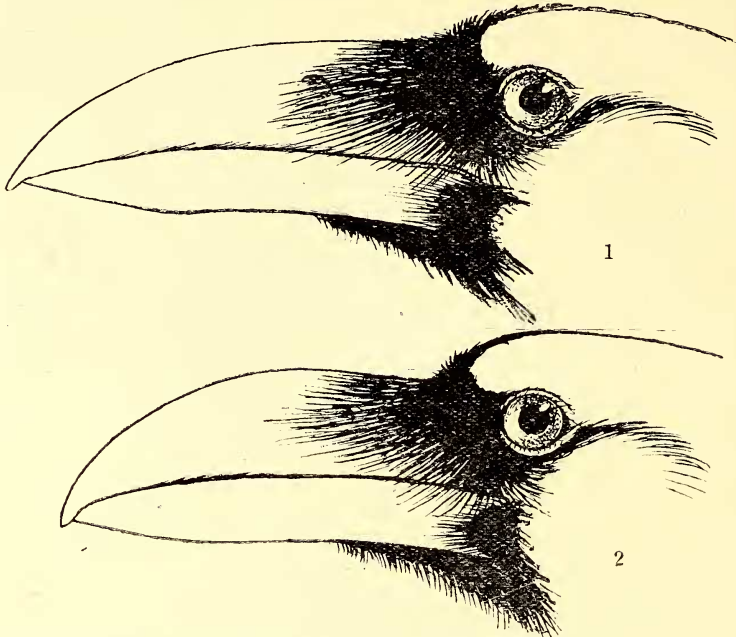


FIG. 1. *Corvus macrorhynchos culminatus*, Mahim, Bombay.

FIG. 2. *Corvus macrorhynchos macrorhynchos*, Chakada, Nadia, Bengal.

The birds of the Gangetic plain of the United Provinces and Bihar are in truth intermediate between the two series, but it will be most convenient to unite them with *culminatus*, and in agreement with the established practice of regarding them as separable from the larger-billed form.

Delacour (*Ibis* 1930, 598) unites these large-billed Andaman birds with *macrorhynchos*. *Macrorhynchos* has the bill up to 73·5, and the wing up to 361 mm., a figure never reached by Andaman birds. But if we include in one form in the gradation in size from Calcutta to Java we are not accepting a wider grading of size than we get in the area assigned to *culminatus* from Ceylon to the Ganges.

We accordingly recognize the following Indian races¹ :—

***Corvus macrorhynchos intermedius* Adams.**

Corvus intermedius Adams, P. Z. S., 1859, p. 171—Kashmir, Dagshai and Simla, restricted² to Kashmir.

A large bird with a weak bill. Plumage a comparatively dull greyish black with little gloss on the hind neck and lower parts. Base of the nape feathers usually whiter than in other forms.

	Bill.	Wing.	Tail.	Tarsus.
33 ♂	54-65	311-365	193·5-241·5	52·5-60 mm.
17 ♀	54-65	292-343	173·5-224	51-56 mm.

'Himalayas from Afghanistan to Bhutan' (Stuart Baker). It is said to breed on the boundary hills of the N.-W. Frontier but no specimens exist from this area. The extension of this race to the Eastern Himalayas is similarly unsupported by a proper series of skins.

***Corvus macrorhynchos culminatus* Sykes.**

Corvus culminatus Sykes, P. Z. S., 1832 (July) p. 96—Dukhun = Poona.

A small bird with a strong beak. Plumage black and glossy. Base of nape feathers dusky.

	Bill.	Wing.	Tail.	Tarsus.
18 ♂	54·5-65·5	274-317	156-189	48·5-56·5 mm.
22 ♀	54·5-63	260-301	147-182·5	48·5-55 mm.

¹ Range of measurements includes adults and first-year birds.

² Stresemann, *Verhandlungen der Orn. Gesellschaft in Bayern*, xii(1916), p. 282.

The Indian Peninsula and Ceylon.

The Jungle-Crow does not occur throughout Northern India as stated in the *Fauna*. It is absent from the whole plains area north-west of a line from Delhi to the eastern border of Sindh, in which area it is largely replaced by the Raven.

Corvus macrorhynchos macrorhynchos Wagler.

Corvus macrorhynchos Wagler, Syst. Av., *corvus* sp. 3 p. 313, 1827—Java.

A large bird with a heavy deeply-bowed beak. Base of nape feathers dusky : deeper and more glossy black than other races. Measurements (Calcutta only) :—

	Bill.	Wing.	Tail.	Tarsus.
4 ♂	61-66	310-328	186·5-196·5	58-59 mm.
8 ♀	55·5-65	283-305	165-182	52·5-56·5 mm.

From the vicinity of Calcutta through Assam and Burma to Java. The Andamans.

Corvus tenuirostris Moore, Catalogue, Vol. II, p. 558, 1858, is wrongly attributed to the synonymy of this species in the *New Fauna*, vol. vii, p. 2. The type is in the British Museum and is a specimen of *Corvus enca compilator* Richmond, from Sumatra, Borneo, Malay, etc.

So far as is at present known the Jungle-Crow is very generally distributed throughout the whole of the Madras Presidency except in certain of the hill ranges of the South-West. In this Presidency the bird somewhat differs in habits as compared with other parts of India. It is a very common and familiar species vying with the House-Crow as a parasite of towns and villages, occurring with that bird and often in greater numbers.

In Vizagapatam¹ La Personne found it common from the coast into the interior both in the plains and on the hills and this seems to be its status all down the eastern side of the Presidency. In the Nilgherries and the Wynaad it is exceedingly common everywhere, being the common crow of Ootacamund and the other hill stations. In Coorg it is common wherever there are human habitations, occurring also, though in smaller numbers, throughout the jungle. In South Kanara and Malabar we have no information about it.

South of the Palghat Gap it is far less generally distributed. In the Nelliam-pathy Hills it does not occur at all according to Kinloch, and Fairbank noticed and Bates has since confirmed that it is entirely absent from the summit of the Palnis, where the former placed its limit about Vilpati 5,500 ft. Although Ferguson found it common throughout Travancore, he also noted its absence from the Southern hills.

Throughout the Presidency the breeding season appears to be fairly regular, from about February until June. In the Nilgiris most eggs will be found in April and May and this is the case everywhere. Bates however remarks that although the Jungle-Crows commence to breed about February at Madras in the drier climate of Trichinopoly, they do not start until May.

Corvus splendens splendens Vieillot.

Corvus splendens Vieill., *Nouv. Dict. d'Hist. Nat.*, viii. 1817, p. 44—Bengal.

Specimens collected :—185 ♀ 186 ♂ ? 4-5-29 Kurumbapatti ; 537-8 ♂ 9-7-29. Vyampatti, Trichinopoly ; 1040 ♀ 25-11-29 Nallamalalai Range 2,500 ft.

Measurements—

	Bill.	Wing.	Tail.	Tarsus.
2 ♂	50-50·5	266-268·5	162-168·5	47-50 mm.
2 ♀	45·5-50	252-253	154·5-155	45-48 mm.

Everyone neglects this common and familiar species with the result that there is very little material for examination from lower Peninsula, India and Ceylon, though 12 fresh specimens from Calcutta and 10 from Nagpur were kindly collected for the Survey by the Zoological Survey of India and the Nagpur Museum. The five specimens collected by La Personne agree with the Calcutta series though their slightly weaker beaks remind one of the complete inter-gradation throughout our area between *protegatus*, the dark Cinghalese bird and *zugmayeri*, the very pale bird of the desert and semi-desert areas of the North-west.

¹ McMaster (*J.A.S.B.* 1871, 212) curiously enough says that he could not find it at Waltair.

On the whole the House-Crow is less generally distributed throughout the Madras Presidency than the Jungle-Crow, though in the towns its numbers are certainly larger. In Vizagapatam, La Personne considered that it did not penetrate into the interior to any considerable extent and in the Godavery delta it was mainly concentrated in the towns. Throughout the rest of the Presidency east of the Nilgiris and Travancore it is evidently generally distributed, common in the neighbourhood of man and absent from forest tracts. In Madras City it is a positive pest and according to Dewar who dilates at length on its habits there, its numbers must far exceed the human population. An albino at Madras is recorded in *S. F.* ix, 507.

In the Nilgiris the House-Crow is evidently a recent colonist. Davison specifically remarks that in his day it did not ascend the hills and was absent also from parts of the low country at their base, as for instance from Goodalore to Nellacotta. While McMaster also says that the Jungle-Crow was 'the only crow of the Nilgherries, replacing his grey cousin at Kullar, the posting stage at the foot of the Kunur Ghat to which place, and no further, *splendens* had penetrated in 1870'. Bates informs us (*J.B.N.H.S.* xxxi, 291) that in the Nilgiris the House-Crow is now common; indeed almost as numerous as the Jungle-Crow. In the Wynaad also it was absent from the hills in Davison's day but we have no information whether it has since colonised that area. In Coorg it is still uncommon, a few odd pairs only to be seen about the villages.

South of the Palghat Ghat the House-Crow is entirely absent from the Nelliampathy and Palni Hills, and perhaps also from the various Travancore ranges though there does not seem to be any very definite information on this point. Outside the hills it is at any rate common throughout the State.

No one has troubled to record much about the breeding of this common bird except that Dewar gives June, July and August as the breeding season in Madras City. In Vizagapatam, La Personne saw birds building in the middle of April and in the Palkonda Hills in August. In Travancore, according to Bourdillon, the eggs are not laid before June, but Ferguson took eggs in February.

In the rain area of Malabar and South Kanara, the breeding season may well agree with that of North Kanara where Davidson found that the crows bred in October and November to avoid the heavy rain.

Dendrocitta vagabunda vagabunda (Latham).

Specimen obtained :—1605 ♂ 26-3-30 Sankrametta 3,000 ft.

Measurements :—Bill 34, wing 145, tail 204, tarsus 33.

In the northern portion of the Madras Presidency down to the valley of the Godavery the Indian Tree-Pie is distinctly scarce and La Personne notes that he only saw single birds at Anantagiri and Sankrametta. The latter (♂) was secured and proves to be quite different to all specimens collected south of the Godavery. It agrees well with a female in the British Museum obtained by Blanford in January 1871 in the Godavery valley near Dumagudiam, and both birds though slightly intermediate in character must evidently be included under the typical race.

Consideration of the magpies collected by the survey immediately introduced two difficult problems, the correct name of the species and the races to be recognized in India. Of late years the name of this bird has oscillated between *Dendrocitta rufa* and *D. vagabunda*, the former being used again in the new edition of the *Fauna*. The bird was first described as *Lanius rufus*¹ by Scopoli (1786) but that name is unfortunately preoccupied by *Lanius rufus* of Linnæus 1766. Latham in 1790 independently described it as *Corvus rufus*.² Mr. Stuart Baker is of opinion that this name may stand but we agree with Ticehurst (*Ibis* 1931, p. 585) that as *Lanius rufus* and *Corvus rufus* are admittedly the same bird the specific name is not rendered tenable by the

¹ *Lanius rufus* Scopoli, *Del. Faun. et Flor., Insub.*, vol. ii (1786), p. 85.

² *Corvus rufus* Latham Index Orn. vol. i (1790), p. 161.

Both descriptions are based on 'La Pie rouse de la Chiné' in Sonnerat's 'Voyage aux Indes Orientales et la Chine', pl. 106, p. 186. As the bird does not occur east of Indo-China, Stuart Baker has fixed Malabar as the type locality.

change of genus. This being so we have no option but to use the next oldest name which is *vagabunda*. The Malabar form is then left without a name.

In our first report we mentioned the divergence of opinion between Ticehurst and Stuart Baker as to the races of the Tree-Pie in India. This has been partly reconciled by Stuart Baker's final admission (*New Fauna* viii, p. 7) of Blyths' *pallida* for the large pale birds of N.-W. India. We also said that in our opinion neither treatment was entirely satisfactory and this view has been justified by the survey series.

Ticehurst had hinted at the possibility of southern birds being separable on their smaller size, but the real position was obscured rather than suggested by the material in the British Museum. The series from south of the Nilgiris consisted of the following specimens, all old and unsexed, 4 from Madras, 1 from Calicut, 1 from Malabar and 6 from Travancore. All are precisely alike, small and richly coloured, agreeing in tint with Bengal birds. They stand out markedly however from the birds from Mysore and the Nilgiris which are pale and at a casual examination recall the birds of the north-west. Individual variation was formerly considered to cover both pale and dark birds.

The survey series however cleared up the position. All birds obtained by La Personne south of the Godavery agree in being small and very pale and quite unlike the dark birds enumerated above. It was immediately suggested therefore that this species agreed with many others in having a dark saturated race in the rain-areas of the South-West and a pale race in the dry Carnatic. The only objection to this theory lay in the four birds marked 'Madras'. Two of these are from the Gould collection and two from H. H. Baker (misspelt *Baber* on the labels which are not original). It is known that H. H. Baker's birds were mostly collected in Malabar though nothing is known of the source of these Gould specimens. All four agree so exactly with the other specimens from Malabar and Travancore and are so different to the survey series that we feel justified in concluding that 'Madras' on the labels stands not for the town but for the Presidency and that these birds came from the western side. The loose use of the word 'Madras' for the whole Presidency was a commonplace of 50 years ago and is still hardly extinct.

We accordingly recognize the following races in India :—

Dendrocitta vagabunda vagabunda (Latham).

Coracias vagabunda Latham, *Index Ornith.*, vol. i (1790), p. 171—India restricted to Calcutta.¹

Large richly coloured race. Back and scapulars dark brownish rufous; rump belly and lower tail coverts fulvous buff.

	Bill.	Wing.	Tail.	Tarsus.
14 ♂	31-35	142-158.5	204-253	31-34 mm.
4 ♀	31-33	136.5-149	198-225	31-32 mm.

Outer Eastern Himalayas from Nepal to Assam, extending to those parts of India not occupied by other forms, and intergrading with them.

Dendrocitta vagabunda pallida Blyth.

Crypsirina pallida Blyth, *J.A.S.B.*, xv (1846), p. 30—Western Himalayas, restricted¹ to Simla.

The largest race, much paler than all others except *vernayi*. Back and scapulars isabelline with a tinge of dusky but devoid of rufous; rump paler; belly and lower tail coverts pure isabelline or buff cream colour.

	Bill.	Wing.	Tail.	Tarsus.
12 ♂	32.5-35	153-173	242-315	33.5-36.5 mm.
9 ♀	30-34	156-164	250-295	32-35.5 mm.

Outer Western Himalayas, N.-W.F.P., Punjab, Rajputana and Sindh.

Dendrocitta vagabunda parvula *nom. nov.* for *Corvus rufus* Latham, *Index Ornith.*, vol. i (1790) p. 161 (Malabar). Similar in colour to the typical race but much smaller.

Twelve specimens unsexed measure :—

	Bill	Wing	Tail
	30.5-34.5	133-151.5	188.5-238.5 mm.

West Coast from S. Kanara to Cape Comorin.

¹ Ticehurst *Ibis*. 1922, p. 537.

Dendrocitta vagabunda vernayi Kinnear and Whistler.

Dendrocitta rufa vernayi Kinnear and Whistler, *Bull B.O.C.* cccxlv, vol. li, p. 17 (1930—Nallamalai range 2,000 ft. S. Kurnool).

Small race, paler even than *D. v. pallida*; the chin throat and breast are almost sooty grey and the abdomen pale creamy fulvous.

	Bill.	Wing.	Tail.	Tarsus.
12 ♂	29-34.5	144.5-157.5	201-226.	31-33.5 mm.
9 ♀	29.5-32.5	139-149.5	187.5-224	31-32.5 mm.

South East India, South of the Godavery, S. E. Hyderabad, Mysore and the Nilgiris.

The above measurements include both adults and first-year birds. The latter are easily distinguishable from adults by the pale tips to the tail feathers. They are generally smaller.

D. rufigaster Gould *P.Z.S.*, 1838, p. 80, is wrongly given in the *New Fauna* (vii, p. 6) in the Synonymy of this species from which the white nape at once distinguishes it. The description agrees better with *D. occipitalis* (Muller) from Sumatra.

Dendrocitta vagabunda parvula Kinnear and Whistler.

The range of this form in the Presidency lies outside the path of the Survey. There is nothing on record to show the boundary between it and *D. v. vernayi* but it presumably is confined to the area of heavy rainfall.

In Travancore according to Ferguson it is found in the low country between the hills and the coast and does not ascend the ranges at all. It is very rare on the Nelliampathi (Kinloch) but Fairbank obtained it at 5,000 ft. on the Palnis. There is no definite information about the bird in Malabar and South Kanara beyond the specimens from the former district in the British Museum.

In Travancore according to Ferguson it breeds in the S.-W. Monsoon, that is between the middle of May and the middle of September.

Dendrocitta rufa vernayi Kinnear and Whistler.

Specimens collected:—82 ♂ 18-4-29 Kurumbapatti; 239 ♀ 17-5-29, 255 ♀ 20-5-29 Shevaroyis; 375 ♂ juv. 9-6-29, 382 ♂ 11-6-29 Chitteri range 3,000 ft.; 729 ♀ 22-8-29, 770 ♀ 28-8-29 Palkonda Hills 1,000 ft.; 847 ♂ 28-9-29 Seshachalam Hills 2,000 ft.; 957 ♂ 1-11-29, 1027 ♀ 22-11-29 Nallamalai range 2,000 ft.

Measurements:—

	Bill.	Wing.	Tail.	Tarsus.
5 ♂	29-33	145-157.5	197-210	31-32.5 mm.
5 ♀	30-32.5	139-149.5	187.5-224	31-32 mm.

South of the Godavery, in all localities visited by the Survey from the islands of the delta, the various ranges up to 4,500 ft. (Nallamalais, Palkonda, Seshachalam, Shevaroyis, Chitteri) to the plains round Kurumbapatti and Trichinopoly, the Tree-Pie was very common in all types of country and jungle. All specimens obtained in this area belong to the small pale race which we have named *vernayi* and it presumably occurs throughout the whole of the presidency down to Cape Comorin. Westwards this race extends to the Nilgiris and parts of Hyderabad and Mysore. In the Nilgiris according to Davison it is common up to 5,000 ft. more numerous at low elevations and gradually decreasing up to that limit, but in many years he only once met it above that elevation, at 6,500 ft. about 7 miles from Ootacamund. The breeding season is not recorded.

Dendrocitta leucogastra Gould.

Dendrocitta leucogastra Gould, *P. Z. S.*, 1833 (July 5), p. 57—Eastern Asia, Malabar Coast.¹

The Southern Tree-Pie was not met by the Survey and its range lies to the west of the areas worked. Its distribution is not very clearly given in the *New Fauna*. McMaster (*J. A. S. B.*, 1871, pt. 2, p. 214) states that he procured a specimen in May at Chikalda in the Gawilgurh Hills, but this record certainly must be regarded with suspicion until confirmed.

The most northerly authentic records are for N. Kanara where A. T. Crawford (*S. F. x.* 422) first obtained a specimen and James Davidson later found it very

¹ The specimen in the British Museum labelled in the handwriting of Gould's Secretary 'Dendrocitta leucogastar Gould Irides blood red Malabar Coast' may safely be taken as the type.

local and confined to the ghats, and ever rare where found. His account, substantiated by specimens now in the British Museum, is as follows:—'The place I have seen it oftenest is at Nilkund on the crest of the ghats between Siddapur and Kumta. I have also seen it at Davimane on the crest of the ghats between Sirsi and Kumta and in the broken country West of Siddapur.' T. R. Bell saw a pair on the Bhara Ghat a little further north.

South of this the bird becomes far more common. There is no accurate account of its status in Mysore but, at Manzeerabad, Macgregor (*S. F.* x. 462) obtained one specimen and at Bangalore Bates found it exceedingly common, though Davison did not meet it in S. Mysore below the Nilgiris. From here it evidently extends over into our area on the Eastern Ghats near Palmaner, where Bates found it on the Munar Ghat.

It occurs in Coorg and Malabar and in the Wynaad it is very common. On the slopes of the Nilgiris it is less common but it occurs up to 5,000 ft. Although very common in the Nelliampathis, and in Travancore from the foot of the hills up to about 5,000 ft., it is curiously absent from the Palnis.

The ordinary breeding season in all parts of the range is apparently from February to April, but Baker quotes Stewart to the effect that in Travancore there is a second brood about August. Both in Travancore and in the Nelliampathis (Bourdillon *S. F.* iv, 402; Kinloch *J. B. N. M. S.*, xxix, 294) this magpie is said to associate habitually with *Dissemurus paradiseus* and further information on this point and the reason for the association is most desirable.

Dendrocitta formosae sarkari Kinnear and Whistler.

Dendrocitta formosae sarkari Kinn. and Whistler, *Bull. B. O. C.*, LI (cccxliv) 1930 (October), p. 17.—Anantagiri, Vizagapatam.

Specimens collected:—1325 ♂ 5-2-30, 1377 ♂ 12-2-30, 1390 ♂ 14-2-30, 1418 ♀ 20-2-30, Anantagiri 3,000 ft.; 1690 ♂ 16-4-30, 1696 ♂ 17-4-30, 1708 ♂ 19-4-30, Jeypore agency 3,000 ft.

Measurements—

	Bill.	Wing.	Tail.	Tarsus.
6 ♂	33-34	136.5-144.5	201-214	28-30 mm.
1 ♀	32.5	142.5	200	28 mm.

Long ago Jerdon wrote that the Himalayan Tree-Pie 'occurs very rarely on the hills of Southern India. I got a specimen said to have been killed on the Eastern Ghats and fancied that I saw it on the Segoor Pass of the Neilgheeries. Horsfield also had one specimen from Madras.'¹ (*B. of I.* ii, 316). This statement was however discredited by W. Davison (*S. F.* x. 399) and Hume lent the weight of his authority against it. The possibility of its occurrence in the Peninsula was accordingly disregarded in both editions of the *Fauna*.

Great interest therefore attaches to La Personne's rediscovery of this bird in the Vizagapatam district where he procured a good series at Anantagiri and Jeypore at elevations about 3,000 ft. His note is as follows:—'Common throughout the area under survey in Vizagapatam but not extending beyond the hill tracts. Their call was at once reminiscent of the Himalayan bird. During the months February, March and April these birds were in various stages of genital development and courtship. They were to be found in rather large numbers feeding principally on the flowers of *Bombax malabaricum*.'

These birds differ from the typical form (E. Himalayas) in the much smaller beak 33-34 mm. as compared with 36.5-38.5 mm. *D. f. occidentalis* (Western Himalayas) is an altogether larger bird, wing in ♂ 145-160 mm.

Parus major maharratarum Hartert.

Specimens collected: 385 ♂ 12-6-29, 407 ♀ 14-6-29, 417 ♀ 419 ♀ juv. 15-6-29 Chitteri range 3,000 ft.; 963 ♀ 3-11-29, Nallamalal range 2,000 ft.

Measurements:—

	Bill.	Wing.	Tail.	Tarsus.
1 ♂	11	67	59.5	18 mm.
3 ♀	11-12	62-68	51-58	17.5-18 mm.

The Grey Tit appears to be scarce on the eastern side of the Presidency. There is no actual record north of the Nallamalal where La Personne procured

¹Cf. Horsf. and Moore, *Cat. Mus. H. E. I. Co.* ii, p. 569 'from Wright's collection.'

the above specimen and south of that he only met with in the Chitteri range, commenting specially on its absence elsewhere.

In the West we know more about it. In Travancore it is confined to the hills and is not uncommon, being found at all altitudes from the base to 6,000 ft. but most numerous at 3,000 ft. In the Nalliampathis Kinloch says it is rare. In the Palnis Fairbank did not meet with it but Terry found it in the Pittur valley (*S. F.* x. 478).

Northwards it occurs all over the Nilgiris, the Wynaad and Coorg, being especially abundant near habitations on the higher ranges of the Nilgiris.

In the Nilgiris the Grey Tit breeds from February to May, and Miss Cockburn records a nest with young as late as 10th November. There is no other information on record for the presidency beyond the fact that in June in the Chitteri range the season was evidently ending. The juvenile obtained agrees with two others in the British Museum (Ahmednagar, Fairbank; Ootacamund, Gosse.) and one obtained by Dr. C. B. Ticehurst at Nasik in having the upper plumage tinged with green and the lower parts faintly washed with yellow. Another juvenile in the British Museum from Ceylon however differs in having no green or yellow tints in the plumage while the upper parts are darker than in the adult. This is probably only an individual variation as although juveniles of *caschmirensis*, *nepalensis* and *cinereus* (E. Java) examined betray their origin in the major group by possessing the green and yellow tints, two other juveniles of *cinereus* from Flores and Alor (Moluccas) are duller replicas of the adults as in the Ceylon bird.

Ticehurst (*J.B.N.H.S.* xxxi. 491) and Whistler (*Bull. B.O.C.*, vol. L, p. 6, 1929) both objected to the arrangement of the Grey Tits of India in vol. i, of the *New Fauna* and their emendations were accepted in vol. vii p. 12. We are however of opinion that no arrangement is satisfactory which combines the Grey Tit of Bihar, Bengal and Assam with that of Java and the neighbouring Islands. The group is a difficult one but on series we think there should be no objection to upholding the following races in India on the distinctions indicated:—

A. Larger and paler forms.

Parus major caschmirensis Hartert.

Parus major caschmirensis Hartert, Vogel P. F., vol. i, (June 1905), p. 345—Gilgit.

- (a) Grey predominates on central tail feathers.
 - (b) Blue fringes of greater coverts broad so that coverts appear blue.
 - (c) White wedge on inner web of penultimate tail feather very long, 20-45 mm., almost always over 30 mm.
 - (d) Outer web of penultimate tail feather practically entirely white.
- | | Bill. | Wing. | Tail. | Tarsus. |
|------|---------|-----------|---------|-------------|
| 27 ♂ | 12-13 | 72-78 | 60·5-71 | 17-20·5 mm. |
| 18 ♀ | 11·5-13 | 68·5-73·5 | 56-62·5 | 18-20 mm. |

N.-W.F. Province, Kashmir and Western Himalayas, visiting Punjab and Western United Provinces in winter.

Parus major ziaratensis Whistler.

Parus major ziaratensis Whistler *Bull B.O.C.* vol. L, No. cccxxv (October 1929), p. 6, Ziarat, Baluchistan.

Details as in *caschmirensis* but differs in the slightly paler bluer grey of the upper parts, the greater amount of white edging on the tertiaries and in the smaller stumper bill.

	Bill.	Wing.	Tail.	Tarsus.
7 ♂	11-12	73-78	62·5-71 mm.	(not noted).
2 ♀	11·5	70·5-71·5	60 mm.	

Ziarat, Baluchistan; Kandahar, Afghanistan.

B. Smaller and darker forms.

Parus major nipalensis Hodgson.

Parus nipalensis Hodgson, *Ind. Rev.* 1838, p. 31—Nepal.

- (a) A wide band of black along shafts of central tail feathers, remainder grey.
- (b) Blue fringes of greater coverts broad so that coverts appear blue.
- (c) White wedge on inner web of penultimate tail feather 12-38 mm. usually over 25.